IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF PENNSYLVANIA

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COMCAST CABLE COMMUNICATIONS, LLC, et al., Plaintiff	:	CIVIL NO. 12-859
v.	:	
SPRINT COMMUNICATIONS COMPANY L.P., et al., Defendant	:	Philadelphia, Pennsylvania February 10, 2017 9:50 a.m.

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TRANSCRIPT OF MORNING SESSION OF JURY TRIAL DAY 10
BEFORE THE HONORABLE JAN E. DUBOIS
UNITED STATES DISTRICT JUDGE

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(The following was heard in open court at 9:50 a.m.)

THE COURT: Good morning, everyone. Please be seated.

(Pause in proceedings.)

THE COURT: Someone has strewn papers back here.

MR. RIOPELLE: Ticker tape.

THE COURT: Not exactly. But we will proceed. I'm just looking -- we have some issues to address, but we'll address them this afternoon. You may proceed with your next witness.

MR. RIOPELLE: The first thing I was going to do, Your Honor, was read two interrogatory responses into the record.

THE COURT: And you may. Interrogatories are part of the discovery process about which I had some comments a few days ago. But a written interrogatory is just that. It's a written question and it's responded to by a written answer, not testimony. So Sprint asked Comcast to answer some questions. Comcast did. We'll now here the questions and the answers.

MR. RIOPELLE: Only the answers. The parties have agreed to only the answer because part

of the question was a little confusing given on some of the procedural matters in this case, Your Honor. So --

THE COURT: Is that agreed?

MR. HOFFMAN: Yes, Your Honor.

THE COURT: Fine.

MR. RIOPELLE: So there's two of them. Comcast responds to interrogatory number three, "No Comcast product or service embodies the subject matter of the 870 patent." And then Comcast's second supplemental response to interrogatory number two, "The inventions of the asserted claims of U.S. patent number 6885870 were conceived and constructively reduced to practice on December 23rd, 1999. That is the filing date of Finland application number 19992783, to which U.S. patent number 6885870 claims priority.

THE COURT: Thank you.

MR. RIOPELLE: One other housekeeping thing, Your Honor, is we would move into -- we would ask to be received by the Court Defendant's Drawing Number 1, which Mr. Finkelson used in his opening. This is part of the stuff that we were getting in yesterday afternoon.

THE COURT: We'll address how we handle

those this afternoon, but for now, it's received.

(Defendant's Drawing Number 1 is received into evidence.)

MR. RIOPELLE: Thank you, Your Honor. And at this point, Your Honor, Sprint would call Dr. Alan Cox.

(Pause in proceedings.)

ALAN JAMES COX, Defendant's Witness, Sworn.

COURTROOM DEPUTY: Please be seated. Please state your full name and spell it for the record.

THE WITNESS: Hi, my name is Alan, A-L-A-N, James Cox, C-O-X.

THE COURT: Good morning, sir.

THE WITNESS: Good morning, sir -- Your Honor.

DIRECT EXAMINATION

BY MR. RIOPELLE:

Q Good morning, Dr. Cox. Could you -- oh, get some water, please. Hopefully, you'll be doing more talking than I am.

(Pause in proceedings.)

A Sorry.

Q That's all right. Dr. Cox, could you introduce yourself to the jury?

A Sure. My name is Alan Cox. I was born in Ottawa, Canada, but now I live in the San Francisco Bay Area with my wife and son.

Q And, Dr. Cox, have you been retained as an expert witness in this case to address the issue of damages?

A Yes, I have.

Q And as part of your preparation, have you prepared slides for the jury?

A I have, yes.

Q Okay. Why don't we start with your education? Can you just trace for us your educational background?

THE COURT: Before we go any further, can I have a copy of the slide deck?

MR. RIOPELLE: I'm sorry, Your Honor.

(Pause in proceedings.)

MR. RIOPELLE: Here's a copy of the slide deck. Here is a copy of the exhibits. You don't need one?

THE COURT: Thank you.

MR. RIOPELLE: And may I approach just to give the exhibits to the witness?

THE COURT: You may.

BY MR. RIOPELLE:

Q I don't think you'll need them, but they're right

there in case --

A Thank you.

Q All right. Let's get back to it.

A Okay.

Q Education?

A Right. I got a Bachelor's Degree in -- Science Degree in Environmental Science at York University in Toronto. And then I switched gears a little bit and did a Master's Degree in Economics at the University of British Columbia in Vancouver. I took a job for three years as a research economist at the Massachusetts Institute of Technology, and then did a Ph.D. in Business -- actually, in Economics, from the Business School at the University of California at Berkeley.

Q And how long have you worked professionally in the field of economics?

A Well, I've been working in economics about 35 years. I took a job as a research associate at the University of British Columbia after I finished my master's, and then I did that three year stint at MIT, and then continued to do economic research while I was a graduate student at the University of California.

Q So after you received your Ph.D., where did you

start working?
A Well, I started going into the business of economic consulting, and eventually ending up in the company I'm out now, NERA, or National Economic Research Associates, where I started in 1994.
Q And can you just explain to the jury what NERA is?
A Sure. NERA is a company of financial accounting and economic experts who provide assistance to companies that are involved in disputes or applications to the government, regulatory agencies, or with each other. So we might be participating in applications for a merger, for instance, with the Department of Justice's Anti-Trust Division, or helping companies that are making representations to a public utility commission. And often, we're also involved in disputes such as this. In all of this -- these sorts of matters we write economic reports that discuss the economic issues related to the disputes and sometimes provide expert testimony the way I am today.
Q And, Dr. Cox, what is your current position at NERA?
A I'm a Managing Director and I'm also the Chair of the company's Intellectual Property Practice.

Q And how did you become involved in intellectual property issues?

A Well, a lot of the work we do in economics is valuation, including valuation of intangible assets, like intellectual property. So I was involved in doing a fair amount of that sort of work. And those issues are obviously important in intellectual property litigation, such as this. And I've done a lot of work in anti-trust as well, and so a lot of the anti-trust issues I was dealing with was the impact of intellectual property on how markets work.

Q Now, have you done any teaching at universities?

A Yeah, I've taught graduate level courses at Northeastern University and at St. Mary's College in California where I taught cases -- or taught courses on business strategy and business economics, or economics for managers. And I also give lectures at law schools usually on economic issues related to intellectual property damages. For instance, later this semester, I'm going to be giving a seminar or a class on damages and trade secret matters here at the University of Pennsylvania's Law School.

Q Have you published any articles in the field of economics?

A Yeah, I've published riff articles or papers in

riff journals, and I also published in various trade journals and magazines or publications that relate to business and policy issues.

Q And have you ever given any lectures or presentations on economic issues that may come up in litigation?

A Yeah, I do that regularly, and I've designed courses for lawyers on economic issues related to intellectual property and litigation. I've given seminars on valuation of intellectual property all around the world, not only in the United States, but in Europe and Japan and Korea. I've done a fair amount of that also in China, including giving talk -- even gave a talk to some justices of the Supreme Court of China on damages issues in intellectual property matters and valuation of intellectual property. And last year, the United States Patent Office sent me to China to talk to judges some more and professionals of the various intellectual property offices in China to sort of move -- help move along some issues between the United States and China on intellectual property issues.

Q Now, I notice one of the publications that you called out on your slide is called "Compensatory

Damages Issues in Patent Infringement Cases," a pocket guide for federal district court judges. Can you explain to the jury what that is?

A Yeah, that was something that was arranged by Justice Michel -- Judge Michel. Michel at the time was the Chief Justice of something called the Court of Appeals for the Federal Circuit. The Court of Appeals for the Federal Circuit is the Appeals Court that hears all patent cases, all appeals to patent cases. All appeals from district courts that go to a higher court go to -- first go to the Federal Circuit, one step between this court and the Supreme Court.

Judge Michel brought together a group of intellectual property professionals to write this pamphlet. I should say that visual person took a little bit of liberty. It's not quite that thick a book. But a pamphlet that would assist judges in managing and thinking about how to manage intellectual property cases, or, specifically, the damages phase of patent cases.

Q So now, obviously, this case involves telecommunications. Can you tell us a little bit about your experience in telecommunications?

A Sure, I've been, again, doing telecommunications

work for about 35 years. I started doing it when I was working in -- as a consultant while I was in graduate school, and that morphed over into my thesis. This was, of course, long before there was a cellular network, and I was doing mostly work, of course in that time on wireline issues or just the old-fashioned telephone company. But I've been -- continued to be involved in telecommunications issues through the years, including sort of traditional -- dealing with traditional telephone service, as well as dealing with many of the issues that come up in litigation related to the cellular network, in particular, dealing with some of the issues that come around -- come up dealing with the thousands of patents that are involved in the cellular network.

Q Now, how about smart phones? Have you done any work on smart phones or cases that involve smart phones?

A Yeah, I've done a lot of work in smart phones. For instance, I was Google's damages expert, copyright damages expert, in Oracle v. Google, which until Apple v. Samsung came along was the biggest and sexiest smart phone case going for a while. But I've also done a lot of other cases having to do with smart phones and, particularly, with the intellectual

property issues related to smart phones.

Q And can you tell us who some of your clients have been?

A Sure. I mean in the high tech area they've been Apple, Samsung, T-Mobile, AT&T, Verizon, Broadcom, Texas Instruments. And then sort of on the more interesting, or non-high tech areas, I've also done -- did an interesting case for Callaway golf balls when they were dealing with some dimp -- some patents that were related to the pattern of their dimples on their golf balls.

Q All right. So in your previous cases, do you usually testify for defendants or do you usually testify for plaintiffs?

A I think -- I certainly do both sides and it's pretty evenly split. I'm not really sure what the -- what the split is right now, but it's -- I'd say -- I do do work for both sides.

MR. RIOPELLE: All right. At this time, Your Honor, Sprint would tender Dr. Cox as an expert in the field of economics and intellectual property damages.

MR. HEIST: No objection.

THE COURT: We will hear Dr. Cox's testimony as an expert in economics and intellectual

property damages.

BY MR. RIOPELLE:

Q Okay. So just to restate, you're here to address the issue of damages in this case, correct?

A Yes, that's right.

Q All right. Now, before we go any further, are you asserting that Sprint has infringed the 870 patent?

A No, I'm just assuming that for the sake of argument only. And I understand that it's you, the jury, that decides whether or not Sprint has, in fact, infringed a patent that you find to be valid. And if -- of course, if you find that Sprint doesn't infringe and the patent is not valid, then, of course, you don't have to pay attention to my -- you don't -- you don't have to deal with my testimony at all because damages, of course, are zero. But in the event that you do find that Sprint has infringed a valid patent, I'd just like to be able to tell you what I think a reasonable payment would be for Sprint's use of that technology. In order to do that, I have to assume that you're going to -- that for that particular circumstance you do find that Sprint has infringed.

Q All right. So let's turn to the work that you've

done in this case. When were you retained?
A About two years ago.
Q And, specifically, what were you asked to do?
A I was asked to review the report that was going to be coming -- review and evaluate the damage claims that would be made by Comcast's damages expert in this case. It turned out to be Ms. Riley. And then I was asked to opine as to whether or not I thought her methodology was reliable, and if not, find -- undertake an independent economic analysis to determine the appropriate measure that -- appropriate measures and appropriate amount of money that should be awarded to Comcast to be paid by Sprint for the use of the intellectual property in this case.
Q All right. And so what work did you do to prepare yourself to, you know, testify here today?
A Well, we start off by reviewing literally thousands and thousands of pages of documents related to this case. I also read the reports of Ms. Riley and I also undertook some research on some of the technical issues, or at least discussed some of the technical issues, with people at Sprint and, of course, with Mr. Mark Lanning, who is the technical expert for Sprint in this matter, and also for -- with Dr. Christopher Dippon, who we'll be hearing

from later about some of the cost issues.
Q And --
A I also undertook my own independent analysis of the -- of the situation in this case.
Q And do the documents and information listed on the slide you prepared, does that summarize the information you looked at?
A Yeah, that's right. There's Ms. Riley's report, I looked at a lot of industry reports, that is analyst reports and reports that discuss the various aspects of the cellular network or the cellular business, their sales forecast, financial documents, Sprint's financial filings to the SEC, and documents produced in this case, including, for instance, things like the interrogatories and the answers that we just heard some of this morning. And then I talked with the experts that I mentioned earlier.
Q All right. So we're not accused of burying the lead, let's get -- let's get to your opinions. What are your -- can you just summarize your opinions in this case?
A Sure. Basically, my opinion is that the evidence in this case, again, assuming that there's an infringement and the patent is valid, is consistent with the payment of a reasonable royalty of $1.5

million. I'm also of the opinion that Ms. Riley's opinion is based on unreliable methodology and ignores many important facts in this case. And to put it more broadly, I don't think Ms. Riley's methodology makes sense in the context of a complex cellular network which is very expensive and risk to build and which incorporates thousands of pieces of intellectual property, including thousands of patents.

Q And this is the second time you've mentioned the number of patents. Do you -- do you have any sense of how many patents are involved in cellular networks?

A Yeah, I do. And if you would like I could explain how I got that number, but I'd say there are at least 10,000, probably tens of thousands, of patents involved in the operation of a cellular network, and we're here dealing with just one of those that is being asserted as being part -- or operating as part -- or operating with a cellular network.

Q And do some of these patents have to do with standards?

A Yeah, that's sort of how I know that there are a lot of patents involved. We've heard a lot in this

case about standards, the -- basically, the compilation of methods and processes that everybody agrees to so that the different components of the cellular network can speak to each other, different components made by different people -- different companies rather, and operated by different companies.

Each of those standards, as I said, describes a whole bunch of engineering processes and methods. And the point is that a lot of those methods and steps and processes are patented, they're covered by patents. And some of those patents are called -- are essential to the standard. So we -- and we actually know the number of patents that are essential -- or have a good idea of the number of patents that are essential to operating a standard, and from that, can get -- infer some -- infer something about the number of patents that are involved in the cellular network.

Q Now, has the 870 patent been listed as essential to offering SMS and MMS services?

A No, it's not.

Q Do these patents that you were talking about, do they have an impact on the operation of the -- of a cellular network such as Sprint's?

A Sure. I mean they are in everything that we -- that it takes to make the cellular network operate. It's in all the equipment, all the switching equipment, all the bay stations, and it's in the handsets as well. And it's important to remember also, even though we're talking about lots of standards, each of which have hundreds, if not thousands, of essential patents, but we're talking about other components of the handset that is also -- that are also patented. You know, there's a -- the screen has patents associated with it, the touchpad, if it's got a touchpad, has patents associated with it. Even the design of some phones are patented. That was the issue that came up in Apple v. Samsung that was recently decided in the Supreme Court. So there's just a lot of patents and a lot of different aspects and components of the cellular network.

Q Well, do all of these patents impact the cost of cellular services?

A Certainly. People pay license fees for those products, for the use -- to use those patents. Companies like Sprint and others undertake research and development so they can develop their own patent portfolios that get involved in messaging and other parts of the cellular network. And research and

development, of course, all costs money. And some of the components, of course, that Sprint buys have incorporated intellectual property that the upstream supplier of that product paid for as well. So all of these costs contribute to the cost of providing services on a cellular network.

Q Now -- okay. You've been talking about all these patents. What does this have to do with the reasonableness of Ms. Riley's opinion?

A Well, I think an easy way to think about the reasonableness of Ms. Riley's opinion is just to extrapolate what -- the $150 million that she claims is an appropriate payment for this one patent. Let's suppose that the patent -- number of patents involved in the operation of a cellular network is only 10,000, which I think is, you know, sort of lower bound. Well, if you multiply $150 million by 10,000, you get $1.5 billion in patents that -- sorry, $1.5 trillion in patents that are being used by -- value worth of patents that are being used by Comcast -- sorry, by Sprint in this -- in this case -- in the operation of its cellular network. And to scale up $150 million to 10,000, you get $1.5 trillion worth of patents that Sprint is using.

Now, Sprint only has one-seventh of the

market share in the United States. It's only got one-seventh of the market. So you have to extrapolate that up again to figure out what the -- what the value is of all the intellectual property that's being used by all companies providing wireless services in the United States. When you do that you get a number of $10 trillion. Now, that is just not credible. That's just far too high a number to associate with just the patents operating a cellular network.

Q Can you -- can you put this $10 trillion number into context?

A Well, sure, $10 trillion is more than half of the gross national product of the United States. And back in 2010, which -- 2005, which is the relevant periods that we're talking about, it represented a much higher percentage of the gross national product. It's truly a mind-blowing number.

Q Okay. So you calculated, didn't you, a reasonable royalty in this case, right?

A Yes, I did.

Q All right. So let's move on to that topic.

A Okay.

Q Can you just remind the jury, although I'm sure they've heard it 100 times, what a reasonable royalty

is?
A A reasonable royalty is the payment that a company makes in order to have the right to use the patent -- let me start again. It's the payment that a company makes to a patent owner for the right to utilize that patent in its product or service.
Q And how do you go about determining the amount for a reasonable royalty?
A Well, one method is to undertake a hypothetical negotiation or model of a hypothetical negotiation.
Q And can you just explain what the hypothetical negotiation is?
A Sure. The hypothetical negotiation is a method of trying to come down to a realistic royalty rate by determining -- by modeling a negotiation between the two parties who would own the -- between the two parties who are going to use the intellectual property and to own the intellectual property at the time that the user is about to start utilizing the intellectual property.
Q So in this case who would be the parties sitting down at the hypothetical negotiation?
A It would be Nokia and Sprint.
Q Is that what you put on --
A Yeah, that's --

Q -- on your --
A That's what we're showing here on this slide, Sprint sitting on one side of the bargaining table and Nokia sitting on the other side of the bargaining table, and they're going to negotiate what they -- what the -- what Sprint is going to pay for the right to utilize the 870 patent.
Q Now, would Comcast have participated in the hypothetical negotiation?
A No, Comcast is not in the negotiation at all. It didn't own the patent at the time and so -- and since we're talking about the hypothetical negotiation taking place in 2005, Comcast didn't own the patent at the time and wouldn't be involved in the negotiation at all.
Q So is it fair to say that we need to concentrate on what Sprint and Nokia would have been thinking about?
A Yes, that's right.
Q All right. Now, we call it a hypothetical negotiation, but is a hypothetical negotiation divorced from reality?
A No, it's not. It's supposed to come up with a reasonable royalty, something that's reasonable and makes business sense. And the statute, in fact -- or

the various -- the law basically says that. And that, of course, makes economic common sense as well. Nobody is going to make -- nobody is going to pay an unreasonable amount of money to utilize a technology. They're not going to use something that is -- they're not -- nobody is going to pay more than the technology is worth to utilize the technology. And the hypothetical negotiation is supposed to come up with something that is reasonably realistic. It's true, we make some simplifying assumptions, but that's in order to be able to -- able to come to a conclusion about what a reasonable royalty would be.

Q And so what type of evidence did you rely upon in determining what the reasonable royalty would be in this case?

A Well, one thing I like to do is look to see what happens in the market. That's usually a good way of determining what -- how a hypothetical negotiation would have come out. And so what I did is I looked for comparable transactions, situations where a similar license was licensed -- or a similar technology rather was licensed, or in this case where exactly the same technology was, actually, in this case, purchased.

Q All right. Before we turn to that, just looking

at market transactions, is -- I know you said you like to look at it. Is this something normally relied upon by economists?

A Yeah, I didn't mean to imply that it was just something I do. This is some -- an accepted valuation technique that all valuation professionals utilize. In fact, Ms. Riley had it as one of the methodologies that is appropriate to use in coming up with a hypothetical -- or with a reasonable royalty.

Q Okay. Is relying on these market transactions something that this jury can do to determine a reasonable royalty if they have to do that?

A Yes, it is. My understanding is that they'll be given an instruction or something that is consistent with that. Here it is. Basically, it says that one of the factors that may be considered in determining what a reasonable royalty is is comparable license agreements such as those covering the use of the claimed invention or similar technology. So we're actually going to discuss a license agreement that covers -- more like, actually, a transaction that covers the use of the same tech -- same invention or the claimed invention in this case.

Q Can you give us an example in everyday ordinary life where you would use comparable transactions?

A Sure. I mean we've all purchased houses and cars, and if you wanted to sell or buy a used car, you would go to the Kelley Blue Book, and the Kelley Blue Book gives you a compilation of -- basically, their summary of a bunch of comparable transactions for every make and model and year of car. With some adjustments that they make for -- or allow you to make based on mileage, they give you a list of comparables. A you would not think of selling a car or buying a car without referencing a comparable in that way and determining the value of what it is you're going to buy or sell based on those comparables.

Q Now, but if you're -- if you're in a transaction, do you just accept the Kelley Blue Book price?

A Well, no, you want to kick the tire, so to speak, or if it's a -- if you see the car is in particularly bad condition for a car that's only been driving 20,000 miles, or in particularly good condition for having been driving 100,000 miles, or because it's got a really beautiful color that you really want to have, you might make an adjustment from the Kelley Blue Book price. But still, it would be the comparable that would be your anchor, so to speak, in terms of determining what price you would want.

Q Now, sticking with your car analogies, suppose that a potential seller recently, you know, retired or had a decrease in income. Would the seller accept a lower price for the car?

A No. You -- the price for the car is determined by the market, and just because you have a lower income because you're retiring and you don't need as big a car, you don't need the car as often, it doesn't mean that you're going to accept a lower price. You're going to get the best price you can based on what the market is offering.

Q Now, what if -- what if the buyer of the car is going to use it for a different purpose? Would that affect the price?

A No, if the buyer wants to use the car for some uses not nearly as -- not quite as valuable as represented by that particular car, and you wanted to sell -- and you were the seller of the car, you wouldn't sell the car to a buyer just because he had a lower value use for it. You would find another buyer who would be wiling to pay you for the car something similar to the Blue Book value.

Q All right. So of this comparable stuff, how does all this relate to determining a reasonable royalty for a patent?

A Well, if you can find a transaction for the same or a similar patent, then that's a pretty good indication as to what the patent is worth.

Q And is there such a transaction in this case?

A Yes, there is. There's a purchase by Comcast of this trans -- of this patent from Nokia in 2010.

Q And I think what you've put on the screen here is -- is this the patent purchase agreement?

A Yes, it is. You can see it's highlighted, the names of the corporations, Nokia and Comcast, and there's the date, June 30th, 2010, the effective date of the transaction.

Q And what was the price?

A Comcast agreed to pay for the patents that were being sold here, which was more than just the 870 -- they agreed to pay for the portfolio of patents $600,000.

MR. RIOPELLE: And just for the record, Your Honor, the exhibit that is being shown on the slide, it is slide ten, is Exhibit PX-8, which has been admitted already.

THE COURT: Thank you.

BY MR. RIOPELLE:

Q Now, you mentioned portfolio of patents. On your next slide you have appendix A. Can you explain what

that is to the jury?
A Yeah, this lists all the patents and patent applications that Nokia agreed to sell to Comcast with this -- with this sale -- in this sale.
Q And you see some of these are in foreign countries. What could Comcast do with the patents issued by other countries?
A Well, it could -- it could assert these patents against companies in other countries -- in other countries. It could sell it to somebody who was interested in asserting that patent. And that person who -- somebody who -- or if Comcast found that a competitor, for instance, was making a product in China and importing it into the United States in competition with its own product, it could sue that seller in China and make -- possibly restrict that company's ability to manufacture a product or get income from that manufacturer in China by forcing it to agree to a patent license based on what that patent is worth.
Q So do these patents in other countries, do they have value?
A Yeah. Yeah, for that very reason. You can get money from them or you can use them to your competitive advantage.

Q And you see down the right-hand column there's a couple places where it says "pending." Do you see that?
A Yes.
Q What do you understand "pending" to mean?
A Well, I think that these are applications, so these are patents that have -- patent applications that have been made to various patent offices around the world, and they're in the process of being approved or disapproved.
Q And do these patent applications have value?
A Yes, there's a probability that they'll -- each one of them has a probability that it will be approved, and certainly some of them will be approved. And if so, then they would become patents that can be asserted in the manner I just described a moment ago. So they have value.
Q And so what is your understanding of what Nokia first offered to sell this portfolio of patents for?
A I understand that their opening offer was to sell this to Comcast, all of these patents to Comcast, for $1.5 million.
Q And what's your understanding of what the final price negotiated between Nokia and Comcast was?
A We saw that in the previous slide. That was

$600,000 for all of these patents.

Q Okay. And when you were talking about your car analogy you were talking about that you wouldn't rely on the Kelley Blue Book price, you would make some adjustments. Do you need to make any adjustments when you look at this price of $600,000, when you're doing that in terms of the hypothetical negotiation?

A Well, yeah, there are a few, one of which is the fact that, of course, we're just talking about one of the patents that are being listed here.

Q And so how many -- how many U.S. patents were sold?

A There are three U.S. patents and one application, but three accepted patents.

Q So on those three U.S., do you have to make any adjustments for the value of each one of those patents?

A Well, one simple thing you could do is you could say well, let's say they're -- all the other patents are, in fact, worth nothing, that is all the non-United States patents are worth nothing, all the applications are worth nothing. That means that there are only three patents that are actually worth anything. So you can just take the three patents, divide that into the $600,000 price, and that would

be $200,000 per patent.
Q Now, is there anything that has to do with one of the other two patents, besides the 870, that you may make a further adjustment for?
A Yes. One of the patents is described as "essential," "standard essential." Another problem with standard essential patents, and one reason why I know how many there are, is because a standard essential patent is one in which the owner has agreed that the patent will only be licensed at what is referred to as fair and reasonable rates. So nobody actually knows what that -- what a fair and reasonable rate is. It's actually the subject of a lot of litigation by itself. And some people -- but some people assert that a fair and reasonable rate for a standard essential patent is zero. I don't believe that. I don't agree with that. But for the sake of argument, I'm going to accept that patent -- the worth of that patent as zero because it can't be asserted for a royalty rate greater than zero.
Q Okay. So if you -- if you assume that that standard essential patent is worth zero, what adjustment do you need to make on the remaining two U.S. patents?
A Well, then instead of dividing $600,000 by three,

I'm going to divide $600,000 by two, and that means that each of the patents was worth $300,000.

Q And one of those patents is the 870 patent?

A That's correct.

Q And -- well, why don't you go ahead and get your --

A Thank you.

Q -- water?

(Pause in proceedings.)

A It's always amazing how dry your mouth gets when you're doing this.

Q All right. So you said -- you just mentioned the number of $300,000. Does $300,000 seem like a reasonable valuation to you?

A Yeah. In my experience, that is a quite high price for a patent -- single patent, but not unreasonable.

Q Now, does the fact that Nokia was selling this have any bearing on your conclusion?

A No, it -- Nokia -- well, it doesn't make much difference one way or the other except Nokia is a sophisticated company. It, as you heard, has contributed massively to some of the standards that are involved in a cell -- in the cellular network. And so I would expect that it would have made sure

they got -- it got a price that was fair and reasonable based on its extensive experience and knowledge about what the patent did and what its worth was.

Q Now, did Nokia consider the 870 to be a relatively valuable patent?

A No, the evidence indicates that it did not.

Q And going on to the next slide, do you recognize this as the invention report --

MR. RIOPELLE: -- which has previously been admitted, Your Honor, as DX-150?

THE WITNESS: Yes, I do recognize this as the invention report. This is a report that was filled out by the manager of the person who made the invention at the time that the research that went into the invention was more or less completed. And in that report, she, the manager, rated the invention, which is described in field two there. But she rated the invention as a -- on a scale of zero to five, as a two, meaning that in her view, it was modest, it had modest value, because it was easy to design around, or it had only a modest potential for standard specification.

BY MR. RIOPELLE:

Q Okay. And so what is the date of this document?

A It's late 1999. It's a little hard to read in the previous field, but --

Q And can you remind us when Nokia sold the 870 patent to Comcast?

A Yeah, that was in 2010.

Q Okay. So the 1999 to 2010, how do those two dates compare to the date of the hypothetical negotiation?

A The hypothetical negotiation was halfway between those two dates in 2005.

Q All right. Well, let me show you -- this is part of the timeline that Ms. Riley used during her testimony. What do you conclude about the value of the patent in 2005 from the fact that it was rated a two in 1999 and it was sold for, as you said, $300,000 in 2010?

A Well, I would expect if I sort of thought of the -- of this as a -- the vertical part of -- side of this graph or this timeline as representing the value of the patent, then I would expect that if the patent was relatively low in value in 1999, as we saw a moment ago -- if Nokia itself thought the patent had relatively low value in 1999, and it had a value of about $600,000 in 2010, I would expect that a price between those two points in time would reflect

those two valuations around that time.
Q But how does Ms. Riles's -- how would you graph Ms. Riley's valuation of that between the times then?
A Well, instead of, you know, a line that would connect this point here, this relatively low valuation 1999, and the $600,000 valuation in 2010, instead of giving us a straight line between those two points, Ms. Riley wants us to believe that the patent value went way up around 2005 and then went way back down in 2010. And she doesn't provide any explanation as to why there was such a huge escalation in the value of the patent just around the time of the hypothetical negotiation.
Q All right. In your analysis of the hypothetical negotiation, did you take into account the popularity of messaging?
A Yes, I did.
Q And what is your -- how did you do so?
A Well, I forget what the exact numbers are, but I think in December of 2005, there was something like 8 billion messages sent per month. And by 2010, on the other hand, the number of messages being sent was many times greater than that. It was in the hundreds of billions I believe.
Q All right. Now let's -- just so we're clear,

what would Sprint receive as a result of the hypothetical negotiation?

A Sprint would receive the right -- only the right to utilize -- use the patented technology on its own cellular network.

Q Would they receive a -- do you agree that under the hypothetical negotiation, they would receive a non-exclusive license?

A That's correct. They wouldn't -- other companies would still be allowed to use that patent in competition with Sprint if Nokia wanted to license to other companies, which they presumably would.

Q And as a result of the patent purchase agreement between Nokia and Comcast, what did Comcast receive?

A Comcast got the ownership of the patent, so Comcast got the right to assert that patent not only against Sprint, but against all carriers in the United States who they allege would have been infringing the patent --

Q So --

A -- with their messaging.

Q So which would be more valuable, to have a license or to own the patent?

A Well, it would be much more valuable to own the patent because you can assert against all carriers in

the United States, rather than just utilize it yourself.

Q All right. Another thing that we heard from Ms. Riley about the hypothetical negotiation is you have to assume that the patent is valid and infringed. Do you agree with that?

A Yes, I do agree with that.

Q All right. So do you -- did you take that into account when you were doing a reasonable royalty?

A Yes, I did. I mean my reasonable royalty is many times higher than the comparable transaction, and one of the reasons is because you have to take into account the fact that when the two parties in the hypothetical negotiation or an -- rather, the two parties in the real world negotiation are negotiating over the patent most of them realize that there's some possibility that either the Patent Office will decide that it shouldn't have issued the patent in the first place, or that a court will decide that the patent shouldn't have been issued in the first place, or that in this case Sprint doesn't infringe. So, you know, in the hypothetical negotiation, on the other hand, both sides know that the patent is valid and infringed. That's one of the simplifying assumptions that we make. So you have to make an

upward adjustment from the comparable in order to get the reasonable royalty that would arise out of the hypothetical negotiation.

Q All right. And so -- just to put this in context, you're comparing the hypothetical negotiation to the actual trans -- Nokia-Comcast transaction, correct?

A That's right. Or put another way, I'm making the sorts of adjustments that you make when you buy a car after you look at the Kelley Book to determine -- to make sure that you're getting a fair price given that the car might be sold at a slightly different time or have different conditions -- it be in a different condition than you expect the average car would have.

Q So were there concerns about the validity of the 870 patent at the time of the Nokia-Comcast transaction?

A There were some concerns, but my understanding is that Comcast felt confident -- relatively confident that the patent was valid.

Q Okay. So based on all the adjustments, based on the Nokia-Comcast transaction, what is your opinion on what Nokia and Sprint would have agreed to in a hypothetical negotiation in 2005?

A It's my opinion that they would have agreed that

sprint would pay a lump sum royalty to cover its continued use of the patent throughout the life of the patent of $1.5 million.

Q Okay. So you've just given the jury a reasonable royalty calculation. Did you do any other analysis to give you a sense of what the value of the 870 patent was?

A Yes, I did.

Q And what did you call -- what is this?

A Well, I undertook something that's called patent citation analysis.

Q Okay. Before you explain to them -- the jury what the patent citation analysis is, is your opinion in this case based on the patent citation analysis?

A No, it's not. I just did this to corroborate my finding on the $1.5 million reasonable royalty.

Q Okay. So can you explain to the jury what a patent citation analysis is?

A Yes. One of the things that has to -- as you know, one of the things -- one of the features of a patent is that it describes the technology that's being patented. And another part of a patent is that a reference is made to previous patents, citations made to previous patents, and these previous patents are related to the patent that's being issued because

they cover a similar subject matter or very close subject matter. I think there was some discussion about other patents and the -- in the -- in the -- what do you call it -- the validity part of this case. And you often see -- well, you do see patents citing earlier patents with similar technology.

Q Well, why don't we -- I think you made a slide on this.

A Yeah.

Q And let me see if I'm smart enough to --

(Pause in proceedings.)

Q All right. I think on this slide is the face page of the 870 patent.

MR. RIOPELLE: And, Your Honor, this is PX-2, which has been admitted.

THE WITNESS: Yeah. Yeah, so this is the face of the patent. And, as I said, in addition to the abstract on the front page, there are references made by the 870 patent to two earlier patents, the 347 patent and the 820 patent that are listed there, both issued in 1999.

BY MR. RIOPELLE:

Q Now, who decides what earlier patents are cited on the face of a patent?

A Well, in making an application to the Patent

Office, the inventor and the attorneys working with the inventor in making the application have a legal responsibility -- legal responsibility to identify all patents that they think or know relate to the technology at issue in the patent that is being issued or the patent that is being applied for.

Q Okay.

A And I should also say in addition to that, patent examiners -- every patent in the process of being -- in the application process is gone through by somebody called a patent examiner, and those patent examiners, who are experts, subject matter experts, in their field and know a lot about what the important patents in their field are, those examiners may also suggest additional references be placed in the patent.

Q Okay. So what we're seeing here is the patents that the 870 patent cited, correct?

A That's correct.

Q Okay. So how do you figure out what later patents cite the 870 patent?

A Basically, the short answer to that is the Patent Office keeps records of that. So you can go into the Patent Office website and you can click on a button and you can see every patent -- later patent that,

for instance, has cited the 870 patent.
Q All right. And what is the importance of these patent citations? For example, what is the importance of the 870 being cited by later patents?
A Well, it turns out -- and there's a lot of empirical work that's been done on this, but it turns out that the value of a patent is strongly correlated, or there's a strong relationship, between the number of times a patent is val -- is cited by a later patent and the value of that patent. So if a patent is cited a relatively large amount of times, that's going to -- that tends to be a relatively valuable patent.
Q Did you -- I think you put together a demonstrative on this.
A Yeah. So this is just a way of describing this. So I imagine a patent that was issued by the Patent Office in 2008 in a certain technology area, which is described as HO4L, which we'll maybe get into later. And I've just sort of stylistically shown a lot of other patents that were granted in later years that cite back to the patent that's being -- that's been issued in 2008. And we can compare that with another patent issued in the same technology class at about the same time, and it's cited by a lot fewer later

patents, indicating that it's probably not as valuable as the other patent that I showed.

Q All right. So you're saying that there is some sort of correlation between the time -- number of times a patent is cited and its value. Do you have an explanation for why there's this correlation?

A Sure. And as I mentioned a moment ago, the patent -- the patents have a lot of description about what the invention is all about, and so -- and these descriptions are published obviously when the patent is published. And so people who are working in a particular field might hear about or read something about a new patent that might have an original idea or something that people recognize as being relatively valuable. And directors of research at company research labs or at universities or independent research centers will tend to start doing research in the same area. And because they're doing research in the same area, they're going to have to cite that patent or any patents that are similar to that that describe this valuable breakthrough.

Q Now, is there research being done currently that is looking into this correlation between the number of times a patent is cited and the value of the patent?

A Yeah, there's a lot of research being done to test that relationship, and it so -- now so will establish that a lot of economic research and research on the economics of innovation and innovation policy actually relies on that result in order to be able to help write policy papers or come up with policies, rather, that will be helpful for expanding technology.

Q And on the slide here is -- where is some of the research being done?

A Oh, well, this is -- I mentioned in my -- in my report, Berkeley, of course, the Massachusetts Institute of Technology, the University of Texas, Yel University, are all important contributors to this. In my deposition, the University of Pennsylvania, work being done there also came up. But, you know, the fact of the matter is these are just companies that I ment -- or universities that I mentioned in my report. It's basically being done in all research centers where people are studying the economics of innovation, and not just in the United States, but also abroad, the University of Oxford, the Max Planck Institute in Munich, the University of Singapore, the Organization of Economic Cooperation and Development. All of those places are doing this sort of work.

Q So is this correlation between the number of times a patent is cited and the value of the patent, is this accepted in the academic literature?

A Yes, it's widely accepted and published in the peer-reviewed academic literature. And, again, in my report I mentioned the RAND Journal -- a paper published in the RAND Journal of Economics, which is a very widely respected and highly respected journal in economics. And I also mentioned the book published by the Harvard University Press. But, again, these were just two that happened to -- I happened to cite in my report. There are tons of reports or papers written on this topic. And, you know, the last couple of years I've been able to attend the annual meeting of the American Economics Association, and both years, there were a lot of papers where this methodology, or this relationship, between value and the number of times a patent is cited was either tested or was being relied upon for other results.

Q Now, are there companies out there who value patents?

A Yes, there are a lot of companies that undertake -- will value patents for you. In fact, NERA, my firm, does that as well.

Q And is NERA, your firm, and these other companies, are they using this patent citation analysis to value patents?
A Yes, it's widely used. I think -- I would say almost all, if not all, major companies that are doing patent valuation work are using citation analysis.
Q Okay. So how do you use the patent citation analysis in this case?
A Well, I had -- I did two things with the patent citation analysis. One was just to get a general sense of how valuable this patent was compared to other patents issued at about the same time and in the same technology area, and then I also looked at the patent -- the value of the patent relative to the other patents that were sold in the $600,000 portfolio, the other U.S. patents that were sold in the -- in the $600,000 portfolio.
Q All right, let's -- you mentioned two concepts. Let's just -- I'd like you to explain each to the jury. Why do you want to look at patents that were issued about the same time that the 870 patent was issued?
A Well, you have to correct for when a patent is issued because obviously the older a patent, the more

likely it is to be cited. A patent that was issued just last year, in November say, is much less likely to be cited than an equally valuable patent that was issued ten years ago just because of the passage of time.

Q And I think you also said something about the same field of technology. Why do you want to compare patents in the same field of technology?

A Well, it turns out that there are -- the patterns of citation are different from technology to technology, so I also correct for -- or normalize for technology. You know, you don't want to compare a pharmaceutical patent, for instance, with an electronic patent.

Q All right. So what do -- what do you want to compare the -- or how did you compare the 870 patent to other patents from the same time, I think you said, in the same field of technology?

A Well, I have an exhibit I think that would make it easier to discuss. So, basically, what I start off doing is I've got the -- I identify the patent, which is shown here under column one, and that's the 870 patent, of course, that's at issue in this case. And then I look at its publication date, which is April of 2005. That is the date that the Patent

Office, the United States Patent Office, granted that patent. And I also look at what I call the IPC subclasses, which are the technology classes, or the classes of technology, that the patent examiner determines this patent belongs to. And the patent can be in more than one technology. So in this case the patent examiner placed the 870 patent in something called the HO4L and the HO4W. HO4L I believe has something to do with error correction and data transmission, and HO4W has to do with cellular networks.

Q All right. So what's in -- and what's in the next column then?

A So then what I do is I look for all the patents in those two IPC subclasses, or technology subclasses. I find -- I identify every patent that was issued between -- well, to put it simply, in the year bracketing the April 26, 2005, date. So I go back to whatever that is, November of 2004 through November of 2005, to get and identify all the patents that were issued in that one year period around the publication date of the 870.

Q And how many patents did you find?

A 7,928 patents were issued in that time period in those two subclasses.

Q Okay. So what did you do next then?
A So, basically, what I then did is I compared how many times the people -- the 870 patent was cited compared to all the other patents in that subclass issued about the same time. So what this says, what that number four says, in column five, says that the 870 patent was cited four times in -- by four later patents.
Q And what is the next -- what's the median for citations?
A Well, that compares to -- that number four compares to the median number, which is 12. What the median patent is -- in this context is is the patent that has the number -- a number of citations such that half the patents have more citations and half the patents have less citations. So there are about 8,000 patents we identified. What the median means is that there are 4,000 patents that are cited more often than that -- than the median patent and 4,000 patents that are cited less often than the median patent. So it's a -- it's an indication of the midpoint basically. It's the 50th percentile.
Q So how does the eight --
A Well, let me just finish my analogy --
Q Sure.

A -- a little bit just to -- the median would be as though you took all the kids in a grade ten class and sorted them by height, made them stand against the wall by height. The median height child would be the one who had -- if there are 20 kids in the class -- well, let's make it 21 just to make it easier -- 21 kids in the class, the median height kid would be the one that had ten children who are taller than he or she was and ten children who are shorter than he or she was.

Q Okay. So how does -- you said the 870 was cited by four later patents?

A Yes.

Q So how does the 870 patent compare to other patents that were issued in the same technology area within the same year?

A It's not very -- it's not doing very well compared to other patents that were issued at the same time. It was only cited four times. Only four later patents between the date that it was issued and the date that I wrote my report had ever cited this patent, compared to the median, that is just the middling -- midpoint of patents, it was cited 12 times -- cited 12 times.

Q What does the number 25 there mean?

A Well, that's another indication of the relative number of times this patent has been cited. What it indicates is that this patent belongs to the bottom quarter of the distribution of value, or certainly the bottom quarter of the distribution of the number of times it was cited, so not apparently a very important patent.

Q All right. So you mentioned a second analysis that you undertook using this patent citation analysis. And I think you said you were comparing it to the other two U.S. patents that Nokia sold to Comcast, is that correct?

A Yes, that's right.

Q Okay. And I think you also made a slide for that?

A Yes, I did.

Q So could you explain, again, just walk quickly through?

A Sure. So, basically, what this slide shows is exactly the same analysis for the 870 patent, but also looked at the 323 patent and the 026 patents, which were also sold in the same transaction. And, basically, I just go through the same thing. I identify the date that the patent was issued, I identify the subclasses that the patent office placed

this patent in. In the case of the 323, there's only one. I then look at the categorically similar patents, what I call the categorically similar patents, that is the ones that were issued in the -- either within six months before or six months after the issue date. You can see, for instance, that the 026 patent had 15,297 patents that fit that criteria issued around that time. And then I looked at the number of forward citations that those patents received, that is the number of times -- the number of patents that cited the patents that are in the highlighted column one, and that shows that the 323 patent was cited 190 times and the 026 patent was cited 73 times.

Now, the fact that the 1999 patent is cited more often is not surprising because it's much older. But before we do anymore analysis, you can see that the bottom patent there, the 026 patent, was issued at about the same time as the -- as the 870 patent, and yet it received 73 citations.

Q So do you get into a valuation?

A Yeah, so we have to normalize for date. So what I've done is, again, I compared the number of times that the patent was actually cited with the number -- the median number of times the patent -- the median

number of times that the categorically similar patents were cited. So, you know, this is dealing with the equivalent of the 12 we saw in the previous slide in column six. The median numbers are 31 and ten, 31 citations for the older -- median -- 31 is the median number of citations for the categorically similar patents that were issued about the same time as the older patent. The younger patent has about ten citations.

Q So based on that, if you look at the last column, is -- are you saying that the -- based on your patent citation analysis, that the 870 would represent 2.4 percent of the $600,000 in the Nokia-Comcast transaction?

A Right. That is basically the bottom line. It's obviously worth a lot less than the other two patents because the number of forward citations of the other two patents is much greater than the median number of citations in those technology classes.

Q So how does this method -- this patent citations analysis method of comparing the value, how does that compare to what Ms. Riley did?

A Well, what this does -- this -- how -- the problem with Ms. Riley's methodology is that there's no -- she doesn't provide any basis for why her

counting up the number of steps and the correlation of -- and the proportion of steps that are used indicate the value of the patented technology. There's no -- as far as I know, no credible peer-reviewed literature that describes that as being the basis of the valuation, there's no basis for suggesting that just because something is used a certain number of steps is a basis for the value of a patent. This, on the other hand, is based on rigorous, peer-reviewed analysis that indicates that the patent at issue here should not be given that much value.

Q All right. So let's talk -- let's turn to Ms. Riley's opinion. What is your assessment of the opinion submitted by Ms. Riley?

A I don't think that her methodology can be relied on -- should be relied upon as the basis for calculating a reasonable royalty in this matter.

Q Why not?

A Well, for several reasons. First of all, she relies heavily on revenue numbers that are unreliable. She doesn't accurately calculate the costs of the -- that are used in providing messaging services. And, finally, the methodology, as I said, is an unreliable one and shouldn't be utilized in a

matter such as this.
Q All right. So you just mentioned I think what, revenue, cost, and --
A The methodology itself.
Q -- and the methodology? All right. So -- and didn't she use something I think she called the income approach?
A Yes.
Q So why is her income approach not appropriate for the revenues in this case?
A Well, for two of the reasons I just stated. One is that -- one reason is that she can't make an accurate estimate of the revenues, and the other reason is because you can't -- doesn't use an accurate estimate of the cost involved.
Q And why can't she make an accurate estimate of the revenues?
A Because Sprint basically does not separately track the revenue that it can attribute to its messaging services. It doesn't track it and it's not possible to track the revenue that it receives from its messaging services.
Q All right. And why doesn't -- why doesn't Sprint know how much revenue is attributable to SMS and MMS?
A Well, like other companies in this -- providing

cellular network services, it is now providing these services in a bundle. Basically, companies are offering individual customers bundles of services for a single price. For a single price, you get to use voice, date, and messaging. And not only do individuals get to do this, but you now can do it across families. So it's impossible to determine what part of the bundled revenue is attributable to messaging.

Q Now, what about -- I think you mentioned cost. What is your opinion about --

A Actually, I didn't quite finish that. And this is a situation that -- not just my opinion about the ability to determine what the revenue is, but, in fact, recently, the Federal Communication Commission -- not that recently, but the Federal Communication Commission now has determined that it can't determine how much -- the value, basically, of messaging in the United States because all of the major operators are providing these bundled services, and nobody actually knows how much revenue is attributable to messaging.

Q Okay. I think the second thing you had mentioned was cost. What is your opinion about Ms. Riley's estimate of cost?

A Well, you're going to hear more from that -- about that from Dr. Dippon, who is more of an expert on this than I am. But my understanding is that Ms. Riley did not include all the costs in the -- that are necessary to provide messaging services, and, in particular, she didn't provide or include any cost for the spectrum, which is one of the most costly portions of the provision of cellular services.

Q Do you know if Ms. Riley included network costs?

A I know that there are many elements of network costs that she did not include.

Q And do you recall -- and I think we have it here -- do you recall Ms. Riley's slide on the -- on the bus?

A Yeah, I do.

Q And I think she was talking about this being a free rider issue. Do you have an issue with her analogy here?

A Well, I do. My problem with this is that it indicates what the situation may have been at the time of the hypothetical negotiation. You asked me earlier about the difference between the use of messaging in 2005 versus 2010, and now a few years later, we know that messaging has grown even more. So, in fact, when somebody is sitting down -- when

Sprint is sitting down thinking about what it's going to need in order -- in terms of capacity it's going to think about the fact that the number -- the amount of messaging is going to increase from a factor of 18 or 20 or 25. And so rather -- by the time -- with the fullness of time, as more and more messaging is being done, more and more of these bundles that Ms. Riley had traveling in these buses would fill up those buses or fill up the cargo space in these buses and you would need to have more buses in order to carry those bundles. And once that happened, then you would start having congestion and you would have to either cause more -- move more buses onto the lanes, which are already crowded, or you're going to have to build more capacity. And that's something that needs to be taken into account when thinking about the relative profitability of messaging. What are going to be your future costs, expansion costs, when you're in -- providing messaging services?

Q Okay. So we've talked about revenue, we've talked about cost. I believe Ms. Riley also used a methodology she called excess profits. Do you have an opinion of her use of this excess profits methodology?

A Yes, I do. I think it's totally inappropriate in

a situation like that. I mean recall that what she did was she took her estimate of the margin earned on messaging, which I've already discussed I have some problems with, and then she compared that to she said was Sprint's normal profits on everything else that Sprint provides.

The basic problem with that is that the excess profits, and, therefore, her valuation of the patents, are going to vary depending on the services that Sprint offers. They're going to go up and down. Sprint's normal profit is going to go up and down depending on what services Sprint offers and where it offers them. So in other words, her excess profits are going to change for reasons that have nothing to do with the value of providing messaging services.

It also has other bizarre results, like the one I pointed out in my report, which is the fact that if you look at SMS profitability the way she calculates and MMS profitability the way she calculates it, and compares each of those to the so-called normal profit, it turns out that MMS is less profitable than normal profits. So that means, taking her logic to the next step, that the patented technology has negative value as applied to MMS. Well, that can't be right because, you know, Sprint

is certainly earning some revenue from MMS and there must be some value to the provision of that service to Sprint. And, therefore, you know, using the excess methodology gives a result that is obviously totally perverse.

Q Is it -- on this excess profits thing, is it -- do you think it's acceptable to compare the profits of messaging without the cost of spectrum and other things like that to the average cost, which would include spectrum?

A Well, that's another excellent point is that, you know, you have to make sure that you calculate the margins in exactly the same way in order for you to be able to use -- compare the margins on messaging with the margins on everything else. And Sprint's normal profits, as she calculated them, include a lot more elements that she excluded form the cost of messaging.

Q All right. So after she did this excess profit analysis, she then I think applied Dr. Akl's step counting?

A Yes.

Q Do you have an opinion about her use of this step counting methodology?

A Yes, I think it's not correct and it doesn't make

common sense even. That valuation should be based on the basis of frequency of use.

Q And do you have any specific problems -- even if you could use the step counting methodology, do you have any specific problems with the way she did so?

A Well, yes. I mean part of the problem with this whole step -- the step methodology is that, first of all, there's ambiguity as to what the number of steps are and professor -- or Dr. Akl testified that he did not include all the steps that Ms. Riley relied -- did not include all the steps in getting a message -- or switching a message and providing messaging services, so Ms. Riley's number has to be wrong. But, more importantly, even if it was correct to count steps and even if the number of steps was correct, Ms. Riley takes no account of any other things that would be going on, any other factors that would be involved in taking a particular step. So if a particular step is taken using a $500,000 piece of equipment and involves five or six other patents, Ms. Riley doesn't take that into account at all. She doesn't have any difference in the -- it doesn't provide any weighting for any other technology or any other input that would be used in implementing every step.

Q All right. Ms. Riley said she used the income method because that measured the value of Sprint's use of the patent. You would agree -- do you agree that that's a proper way to measure it?

A No, I don't.

Q Okay. Can you give me an example?

A Well, the frequency of use, as an indicator of value, to give a common sense analysis as to -- or description as to why it's not appropriate, think about a patent on a tire. You know, the -- a tire on a car, when it's attached to a car, is used 100 percent of the time that you're driving the car. But that doesn't mean that the entire profit of the car should be associated with that one patent. No, you've got to make some allocation of the patent to all the other intellectual property and all the other engineering and all the other know-how and all the other manufacturing costs that go into make the car. You can't just attribute the entire profit of selling a car to the tires because they're always used.

Q So then how would you determine the value of the tire in that instance?

A Well, that's the beauty of markets. You know, we know how much a tire costs because we can go out and buy one, and we know we wouldn't pay anything more

than what we could buy a tire for than we might when we go down to Big O Tires. Markets allow us to make the allocation between, you know, what in this case the patent is actually worth and the overall profitability, if you could calculate it, of messaging.

Q Okay. Did Ms. Riley -- did Ms. Riley take into account the Nokia-Comcast transaction?

(Pause in proceedings.)

A No, she refused to take it into account.

Q All right. I think one of the things that Ms. Riley testified about was Nokia's changed circumstances. I think she calls it Nokia's demise. Can you just repeat what you understand her -- she was talking about there?

A Well, yeah, she basically said, as I understand it, that Nokia was in a different financial situation in 2010 than it was in 2005, that it had a different patent strategy and a different strategy overall, and that because of those situations, Nokia would have been willing to take a discount or sell the patent for a lower price.

Q Now, do you think this would have had any impact on the price Nokia would have been willing to sell that patent for?

A No, I don't think so at all. First of all, Nokia was still doing very well. It had earnings I think of 2.1 million -- billion Euros at about -- in about 2010. But second of all, even if it was doing relatively badly, it was certainly not in desperate straits, so it could sell in an orderly manner. And it had a fiduciary responsibility to its shareholders to get the best price it could. It had a fiduciary responsibility -- an obligation to the shareholders to get a price that reflected the value of the patent.

Q Okay. What is your understanding of Nokia's financial position today?

A Nokia now has -- for the last year data is available, 2015, I think it had earnings of 1.7 million -- sorry, 1.7 billion Euros and was earning a margin of about 13.5 percent. And it had a very strong balance sheet still, I think in the 20 billion Euro area. So it's still a very strong company and was a strong company in 2010, led by people who are very savvy about how they want to manage their intellectual property, and not the sort of people who are going to sell it at any sort of a discount.

Q Are you aware of any recent acquisitions Nokia made?

A Yeah, I understand that in the last year or two they bought Alcatel-Lucent, which is a major European technology company.

Q Now, what about Ms. Riley's opinion that Nokia wanted to monetize its patent portfolio? Do you have an opinion about that?

A Well, you know, it may have wanted to monetize its patent portfolio, but what does that mean? That means you want to get -- you want to sell -- you want to get money for it and it means you want to get the best price you possibly can. So, again, I think that it would mean that the price that Nokia got for its patent in 2010 would be reflective of the -- of market price for that patent.

Q I think one of the other things you said earlier in your testimony is that Ms. Riley overstated the value of the 870 patent. If Ms. Riley's valuation is correct, what would the effect of this be on the entire industry?

A Well, I think one way of thinking about that is to scale up what Ms. Riley is implying about the value of the patent. So if the patent is worth $150 million to Sprint, and Sprint represents only one-seventh of all the companies that could use this patent, then that means that this patent, according

to Ms. Riley, when applied to all the manufacturers -- all the providers of cellular service, that this patent is worth $1.7 billion. Well, one thing that you have to wonder about is why would Nokia cell for $600,000 a patent, in combination of other patents, which, presumably, have value -- why would it sell that patent for $600,000 when the patent is actually worth something like 2,500 or 5,000 times more than that, you know, something closer to $1.7 billion? It just doesn't make sense. And, as I implied earlier with my other quest -- with the answer earlier where I was talking about the large numbers that Ms. Riley is talking about here, you know, if we act -- if companies have to pay royalties of that size for just one patent of the -- and you scale that up to the tens of thousands of patents that are involved in providing cellular network services, the number would be truly astronomical.

Q All right. Did you attempt to make any corrections to what you believe are Ms. Riley's errors in her calculations?

A Yeah, I did do some adjustments to some of her calculations to come up with more reasonable numbers, though I still didn't -- don't accept the methodology

as being appropriate.
Q And is this -- what's on the screen now, is this the schedule from your report in which you tried to do this?
A Yes, it is. And you can see in the bottom of column two, which is highlighted here, actually, blown up here, I estimated total damages just based on her methodology of $67,000.
Q Okay. Two more topics. Did you read the transcript of Ms. Riley's testimony from Monday?
A I did.
Q And do you recall that she mentioned a report that was published by J.P. Morgan I believe?
A Yes, I did.
Q Have you reviewed these reports?
A Yes, I have.
Q Are they cost analyst studies that would be done by trained economists?
A No, they're not.
Q And do the people who did these studies, did they have access to the internal Sprint financial information that you and Ms. Riley had in this case?
A No, they didn't.
Q And the FCC report, that was only referenced -- that only referenced the Morgan Stanley report, is

that right?
A That's correct, yeah.
Q And what did the Morgan Stanley report identify as the three primary services offered by cellular networks?
A Voice, data, and messaging.
Q All right. One more quick topic here. Ms. Riley has said that the reasonable royalty should be in the form of a running royalty. Do you agree?
A No, I don't.
Q And what do you think the form of the reasonable royalty should be?
A Well, I think in keeping with business -- or business practice in this industry, for this sort of service a -- the royalty should be in the form of a lump sum payment, that is Sprint would have agreed at the hypothetical negotiation to pay the $1.5 million in a single payment which would cover its right to use the technology for the remainder of the life of the patent.
Q And have you looked at agreements in this case?
A Yes, I have. I've looked at agreements in this case and many other licenses as well.
Q And what does reviewing those agreements indicate to you? Should it be a lump sum or a running

royalty?

A It should be a lump sum, based on my experience looking at other licenses, and there's good reasons for that. It's very difficult to account for all the transactions. There's a lot of accounting and reviewing work that has to be done in order be able to calculate the royalty that is owed, the amount of money that's owed at the end of every year, based on trying to track trillions of -- trillions of transactions and trillions of messages.

Q Okay. Could you just summarize for the jury what your opinions are in this case?

A Yeah, I'll just go back to the slide I had closer to the opening. That if the patent is infringed and valid, if you make that finding, then the facts in this case indicate that a reasonable royalty would be a lump sum payment of $1.5 million. And Ms. Riley's methodology I found to be unreliable. It's the wrong approach and she did ignore many important facts and comes up with an unreasonably large number.

Q Dr. Cox, thank you for your time. Please answer Mr. Heist's questions.

A Certainly.

THE COURT: I think we'll --

MR. HEIST: Sorry, Your Honor.

THE COURT: I was going to say it's 11:17. I think we ought to have a quick recess.

(Jury out, 11:16 a.m.)

THE COURT: Be seated, everyone. You may step down, Dr. Cox.

THE WITNESS: Thank you.

THE COURT: What time is your --

MR. RIOPELLE: My --

THE COURT: -- absolute --

MR. RIOPELLE: 12:00.

THE COURT: -- latest?

MR. RIOPELLE: 12:00.

THE COURT: 12:00?

MR. RIOPELLE: My flight that I was going to take at 2:15 has already been delayed, so I canceled the flight and I have a car meeting me out front at 12:00, which I believe will get me to the visitation about a half an hour after it starts, assuming that there's no --

THE COURT: You're going to drive to Virginia.

MR. RIOPELLE: Yeah.

THE COURT: How long do you think the cross will be.

MR. HEIST: I would estimate an hour, Your

Honor. I apologize for that because I'd --

THE COURT: No, no need to.

MR. HEIST: -- rather not have it mulled over, but I don't think I could finish. I will do my very best to move along and go as far as I can. If I can finish, I will.

THE COURT: Well, I thought I had to give the jury a short break. They've been at it since about 9:45. Let's stick to the ten minutes. Let's make it a little shorter than that. And --

MR. RIOPELLE: Thank you, Your Honor. Again, thank you for your kindness of dealing with my situation.

THE COURT: Are we going to be able to address the lump sum versus running royalty issue in your absence?

MR. FINKELSON: We are, Your Honor.

THE COURT: Okay.

MR. RIOPELLE: He's not just a technical guy.

THE COURT: Well, we'll see. How about seven minutes then?

(Recess taken from 11:18 a.m. to 11:26 a.m.)

THE COURT: Be seated, everyone. You may

proceed with cross-examination.

MR. HEIST: Thank you, Your Honor.

CROSS-EXAMINATION

BY MR. HEIST:

Q Good morning, Dr. Cox.

A Good morning, Mr. Heist. How are you?

Q Good. Now, you are an economist, right?

A Yes.

Q And you're not testifying here as a technical expert?

A That's correct.

Q And you're not a patent lawyer?

A That's correct.

Q And you're not testifying as a legal expert or a patent expert?

A That's correct.

Q And you're not an accountant?

A That's correct.

Q I think we may get into some issues involving accounting, engineering, and law in your cross-examination. I just want to establish that. Now, in giving your opinion, you assumed -- and I know it was an assumption just for the purpose of your testimony -- but you assumed that the 870 patent is valid and has been infringed by Sprint?

A Yeah, that's the simplifying assumption that we make in order to be able to even come up with a damage number.

Q Right. And you're not -- you're not giving an opinion on the underlying issues, but everything you said about your opinion starts with the assumption that the patent is valid and has been infringed?

A That's correct.

Q Now, if the jury decides that Sprint has infringed even one claim of the patent and that that one claim is not invalid, as Sprint alleges, then damages must be awarded, correct?

A Yes, appropriate damages should -- I suppose must be awarded, yes.

Q And the measure of damages that must be awarded is an amount of money that would compensate Comcast for Sprint's infringement?

A That's what the law says, yes, and that's consistent with the number that I suggested.

MR. HEIST: And just to remind ourselves of what we looked at in Ms. Riley's testimony regarding the law that the Court will instruct all of us on, could we please have Ms. Riley's slide PD4.6?

BY MR. HEIST:

Q "The damages you award must be adequate to

compensate Comcast for the infringement." Do you see that?

A Yeah, and it's consistent with the number that I suggested.

Q And then it says, "Comcast is entitled to recover no less than a reasonable royalty for each infringing act." Do you see that?

A Yes.

Q And you understand that that's our task?

A That's correct. That's consistent with the number that I suggested and the lump sum royalty I suggested.

Q Now, the damage award in a patent case can be higher than a reasonable royalty in some instances, can it not?

A Well, not just for the -- not just for the compensatory -- not for just the compensation part of the award, no, not in --

Q Could --

A -- my understanding.

Q In some cases the damage awards are higher than a reasonable royalty, but the royalty establishes a floor, does it not, beneath which damages may not fall?

A In a reasonable royalty case or in -- are you

talking about loss profits cases?
Q My point is that reasonable royalty is the bottom. Damages cannot go below a reasonable royalty in a patent case if infringement and validity is found?
A I'm just trying to think of whether in lost profit cases it's possible to get a reasonable royalty that's higher than the lost profit, but I think as a general matter, I can accept that.
Q And the patent statute itself, which I think we looked at at your deposition last year, says that, "Damages can be no less than a reasonable royalty for the use made of the invention by the infringer," correct?
A That's correct, and that's consistent with my -- what I was doing in this case.
MR. HEIST: And can we see Ms. Riley's slide PD4.8?
BY MR. HEIST:
Q And, again, that's from the instructions that we will receive, I expect, from the Court, and it uses that language right out of the statute that says, "A reasonable royalty is defined as the amount of money Nokia and Sprint would have agreed to -- agreed upon as a fee for the -- for use of the invention."

That's what we're trying to get at here, a royalty for the use of the invention, correct?

A That's right. That's right. We're looking a the royalty, appropriate royalty, for a single patent in a complex cellular network system, that's correct.

Q And you were here when Ms. Riley testified I believe, were you not?

A I was here for the Friday testimony. I was not able to be here on Monday.

Q And she referred to the Georgia-Pacific factors, which are factors from a famous patent case that has been quoted and cited again and again over the years, correct?

A Yes.

Q And one of the factors that she mentioned that she looked at was the factor, and I'm going to quote it, "the extent of use by the infringer and evidence probative of the value of that use?"

A Yes, that's right.

Q Okay.

A The value of that use.

Q Right. So we have to look at the extent of use by the patent by Sprint?

A We have to look at the value of the extent of use of that patent, not just the number of times it's

used.

Q Now, just to get a few preliminary matters out of the way, you agree Comcast owns the patent?

A As of today, that's my understanding, yes.

Q And they acquired it from Nokia in 2010?

A Yes.

Q And when they acquired the patent from Nokia in 2010 Comcast acquired the right to collect damages that arose when Nokia owned the patent, correct?

A That's correct. They could assert that patent against everybody in the United States who they felt was infringing that patent.

Q Or they also had the right, did they not, to cross-license the patent with others?

A That's correct too, though that would be based -- that cross-licensing would be based on the value of the patent.

Q Understand. Now let's talk about the damage period. If the jury finds infringement of a valid claim in this case, Comcast is entitled to damages running from February 17th, 2006, through -- in Comcast's claim, through September 30th of last year, correct?

A That -- certainly the start date is consistent to my understanding, and if -- to the extent that they

are still infringing, they would be entitled to the royalty calculated through that time period.

Q So --

A Though, again, I'd say that an appropriate damage calculation would be a lump sum payment.

Q For the life of the patent?

A That's correct.

Q Could we call that a "paid up license?"

A Could we call it that?

Q Yeah, would your -- let's -- I think there may be some confusion here and I think it's worth trying to untangle it. Your view is that the appropriate reasonable royalty in this case is $1.5 million paid up license for any and all use of the invention of the 870 patent that took place between February of 2006 up through the date the patent expires?

A Yes, that would be my estimate. The use would be -- I guess there would probably be some restriction to the uses that have actually been made by Sprint of the -- of the patent.

Q But just so we're all clear, you're seeking -- your opinion would seek compensation for acts that haven't even occurred yet?

A Yeah, it's -- that's a common feature of technology licenses for the provision of wireless

services, and that -- what I'm suggesting is in keeping with that common practice.

Q Okay. So the last year for which we have information from Sprint, there were 330 million messages, approximately, SMS and MMS messages, that were sent and delivered by Sprint. Just accept my number for just a moment, if you would.

A Okay.

Q The patent doesn't expire until 2023. Are you aware of that?

A Yes.

Q And so let's just call that six years from now. So your opinion is that the measure of damages should be $1.5 million for the 2.66 trillion messages that have already been sent and delivered, and what could be as many as 2 trillion messages that have yet to be sent and delivered before the patent expires, is that right?

A Well, that's right, but it could go the other way around too. I mean Sprint's messaging could continue to be threatened by the over-the-top messaging and it might go down considerably --

Q Right, the --

A -- so the risk is all on Sprint.

Q The -- no one can tell for sure what the future

will hold, but your opinion is that the value that you're seeking as a reasonable royalty is paid up for the life of the patent for everything that's happened in the damage period so far and everything that might happen until the patent expires more than six years from today?

A Right, but you got to remember, we got to put ourselves back at the time of the hypothetical negotiation. At that time what was going to happen in the future was not known with certainty, and there's always a possibility that, as I said, other technologies would come in and threaten the revenue stream to the extent that you could associate one with text -- with messaging. It would threaten that revenue stream and eliminate messaging through the -- through the system. And in that case, Sprint would have been out $1.5 million for using a technology -- for a tech -- for the right to use a technology that it never got a chance to use.

Q No one's crystal ball is perfect.

A That's correct, but -- and that's one thing that has to be taken into account when calculating a reasonable royalty.

Q But just taking the two parties' damage experts' theories and putting them next to one another, we're

not really comparing apples to apples in one sense because Ms. Riley's number only seeks compensation through September 30th of last year. Your number would be compensation for infringement that might or might not occur in the future between now and the time the patent expires? I just want to make that point. Is that correct?

A Well, it's not quite as different as that. I mean her payment, her royalty, could be turned into a lump sum by doing a discounted present value back to 2005. But apart from that -- we could turn the apples into apples except for the fact that there's still some potential for ongoing infringement of the patent if it's valid.

Q And that potential -- if we take the last year for which we have information, that potential could be another 2 trillion messages?

A Sure, of which this patent, if it's valid, provides a very small component of the technology that's necessary to do that, a minuscule portion of the technology.

Q All right. Ms. Riley says that to determine a reasonable royalty, one must consider a hypothetical negotiation between a willing a licensor and a willing licensee that would have taken place on the

date of first infringement. You agree with that?
A I do, yes.
Q And she says that on the facts of this case, that negotiation would have taken place on April 26th, 2005, the day the patent issued?
A Yes.
Q And you agree with that?
A Yes.
Q And she said at that time Nokia owned the patent, and so the negotiation would have been between Nokia and Sprint, and you agree with that?
A Yes, I do.
Q And she said at that negotiation, the hypothetical negotiation, both parties, Nokia and Sprint, would have come into the room with the understanding that the patent was valid and that the patent was infringed by Sprint.
A That's correct, I've acknowledged all of those points.
Q And in that respect, the hypothetical negotiation differs from any real world negotiation which -- with which you are familiar, correct?
A That's correct. Those are -- those are the only differences, and as I said in my direct testimony, that's a set of simplifying assumptions that we use

so that we can come to some number, so we can calculate and determine how the hypothetical negotiation would have ended up, but it still has got to be a realistic royalty.

Q I understand that, but the law requires us to start with these simplifying instructions that don't really happen in the real world, correct?

A That's correct. That's one of the things we have to correct for when we're using comparables.

Q And the hypothetical negotiation, at that negotiation, the parties must be presumed to have knowledge about what turned out to be the extent of infringement over the damage period, correct?

A Well, maybe you can elaborate on that because I'm not sure that I agree with that.

Q Well, at the time of the hypothetical negotiation, the parties -- let's start with -- let's start with what they would have known on the date of hypothetical negotiation, and look -- let's look at some real world facts that they would have brought into the room with them, okay?

A Okay.

Q Now, just before the hypothetical negotiation in 2004, Sprint began providing two-way text messaging, correct?

A Yes.
Q SMS?
A Yes.
Q And around that time was the beginning of inter-carrier interoperability, correct?
A That's correct.
Q And that means that a Sprint subscriber could text an AT&T subscriber or Verizon subscriber and vice versa?
A That's correct.
Q And just about that time inter-carrier interoperability had also just been extended to MMS messages as well?
A I'll except that.
Q And the introduction of inter-carrier interoperability was stimulating growth in text messaging, correct?
A Yeah, I agree that there are a lot of other factors that contributed to the SMS -- the success of SMS to the extent that it's been successful, and that's one of my problems with Ms. Riley's analysis. She doesn't take into account all of the other factors that contributed to the success of the SMS technology. This is a great point. You know, this is something that was worked out by engineers, as

we've heard before, and it came -- is the result of agreements that were worked at through many man hours and person hours of engineering work that had to be -- has to be taken into account in terms of -- in calculating the value of this particular patent, which, as I said, seems to be a relatively minor component of all the things -- all the things that had to happen for SMS to be successful, not just this agreement, but also the fact that you can -- you have more efficient keyboards now and better screens and all the other things that have facilitated the expansion of SMS.

Q Thank you for that explanation. My question, however, was introduction of inter-carrier interoperability was stimulating growth in text messaging at the time of the hypothetical negotiation, correct?

A That's correct, quite independent of the ability -- of the presence of this patent.

Q I'm not asking you about the patent. I'm asking you what the parties understood when they walked into that room. And they walked into that room knowing, did they not, that inter-carrier operability was just coming on the scene and that it was stimulating the growth in the number of messages --

A Right, but --
Q -- before they even mentioned the patent?
A They didn't -- that's right, but they didn't know how much it was going to be stimulating, they didn't know how many complementary factors would be available to continue the growth of SMS messaging.
Q Well, just before the hypothetical negotiation, both parties knew that SMS and MMS were increasing in use quite considerably, correct?
A Right, for the reasons that you suggested, not necessarily having to do with the patent.
Q In fact, three years before the hypothetical negotiation, the number of SMS messages doubled, and then two years before, they doubled again, and the year before, they doubled again, is that right?
A Those are relatively -- that's true, they did double in those time periods, though that's no guarantee of future growth.
Q I'm just trying to understand what the experience was of those two parties in this meeting. Let's suppose it happened in Helsinki, Finland and Sprint came in there, walked in the door, sat down at the table. Before anybody said anything, both parties knew that this text messaging was doubling and doubling and doubling again, before anybody mentioned

anything about the patent, right?
A Right. And they would be talking about all the things that had come together that made that possible.
Q And between 2005 and 2006, the monthly volume of text messaging and MMS messaging doubled again, correct?
A That's correct, for various reasons.
Q And between the time of that meeting and September 30th of last year, Sprint alone sent and delivered more than 2 trillion SMS and MMS messages, correct?
A Well, we're talking about what was known at the hypothetical negotiation, and that was not known at that time.
Q But it's sometimes possible to look at what happened after the fact to figure out what the parties would have agreed to at the negotiation, correct?
A I think that that's not entirely correct.
(Pause in proceedings.)
Q Do you agree that evidence in a case like this is not necessarily limited to facts predating the date of the hypothetical negotiation and that in certain circumstances, factual developments occurring after

the date of the hypothetical negotiation can inform the damage calculation?

A Yeah, I do agree with that. I'm just saying you have to be very careful about how you use information that comes later. You can't take, you know, the actual sales that happened in 2016 and say well, everybody back at the date of the hypothetical negotiation would have known that would have happened. They would also have been thinking about well, what the heck happens if, you know, some other technology comes in or if our servers don't work properly? There are all sorts of risks that they would be concerned about, including the risk that SMS might not grow or that people would decide to communicate in other ways.

Q But you're not suggesting that it's inappropriate to look at evidence that happened after the date of the negotiation in determining what a reasonable royalty is?

A That's right. If you don't have better information, such as a comparable that we have in this situation, then, you know, you might have to take into account what actually happens as an indicator of what was in the state of mind or what would have contributed to the state of mind to the

people in the hypothetical negotiation, just as if there had been a collapse in the sale of SMS. That would give you some indication or remind you that you would need to take into account the risk of making any investment in providing a service like this.

Q Well, Sprint at the time of the negotiation had already taken the risk of providing a service like this, correct?

A That's correct.

Q So at the date of the hypothetical negotiation, they were off and running, right?

A They were off and running, but they realized that there was a risk and that there were things that they would continue to need to do in order -- in order for the texting to continue to be a service that they could provide.

Q Well, they were already providing it.

A That's correct, but just because they were already providing it doesn't mean that they were ready to scale up to much larger levels of sales or that they recognized that there was a possibility that telecommunication services doesn't work. I've been involved in lots of cases where people have developed telecommunications ideas that didn't pan out, and this might have been one of them.

Q Well, they already knew it was panning out to the extent that they had -- were delivering billions of messages in 2005, isn't that right?

A Well, they were delivering lots of message in 2005, but they didn't know what was going to happen in the future.

Q And one risk that they hadn't covered was the risk that they might get sued for infringement of this patent, and when they walked into that room they knew they were infringing the patent and so did Nokia, right?

A Well, technically, not because you're supposed to do the hypothetical negotiation just before the -- before the patent becomes enforced.

Q Right, so the date of this hypothetical negotiation that we've been hypothesizing about is the date the patent was granted, and the very day the patent issued from the United States government is the day that the infringement began, right?

A Okay. Well, I don't want to quibble about that. That's correct.

Q Now, Ms. Riley said that there were three standard methods of patent valuation. She referred to them as the income approach, the market approach, and the cost approach, correct?

A Yes.
Q And she applied, or tried to apply, the income approach, correct?
A That's correct.
Q That approach values patents based on expectations of economic income that may be generated from use of the patented property, correct?
A That's correct. It's got to be tied to what the patent actually contributes to the provision of the services at issue here.
Q So the income approach looks at the infringers use of the invention, correct?
A It looks at the value that is derived from the infringers use of the invention, just the invention itself, not the overall product.
Q And, as we talked about, the patent statute says that the patent owner, if infringement is shown, is entitled to a reasonable royalty for the use made of the invention by the infringer? We've already talked about that, right?
A That's correct. You should get whatever the patent is worth, whatever --
Q But you --
A -- for instance, the market would show you the patent is worth.

Q But you take exception to her use of the income approach in this case? You talked about that in your direct examination, correct?
A That's correct for the reasons I stated.
Q Now, one reason you say that the income approach would have been -- is inapplicable in this case is because Sprint would have wanted a -- I think you used the term "lump sum?"
A No, that's not why it's inappropriate.
Q You think the parties would have agreed to a lump sum?
A That's correct. And you can use the income method to calculate a lump sum royalty.
Q All right. I think we ought to define some terms here because I'm going to talk over you I think or vice versa. There's "lump sum." Comcast is asking for a royalty that's calculated in terms of a royalty per message times the number of messages?
A Yes.
Q Can we call that a running royalty?
A Yes.
Q And Ms. Riley took that running royalty and converted it to a lump sum amount. She suggested that the correct amount was $153 million, correct?
A That's correct. That's her summation of a

running royalty.
Q That's her summation? But it's a single number that is the multiplication of the royalty base times the royalty amount, correct?
A Right, a single number that's the royalty rate times the number of messages.
Q So you would call that a summation? I just want to --
A Yeah.
Q -- define some terms so that we can keep straight the difference between a lump sum amount and a running royalty amount that's converted to a single number.
A Yeah, sure, a summation, that's a --
Q You call that --
A -- that's a fine word.
Q -- a summation?
A Yeah.
Q So she put forward a summation number that's the sum of the rate times the base?
A Yes.
Q Now, when you turn -- use the term "lump sum" do you mean paid up?
A Yeah, I think that if "paid up" means that in this case Sprint agrees to pay Nokia $1.5 million and

gives over -- and for that, gives Sprint the unlimited right to use the patent in the manner that it's being used in the Sprint network now, that's a paid up, or lump sum, license.

Q Can we call -- when we talk about lump sum let's use the term "lump sum paid up amount."

A Great.

Q That way we're clear about the difference between these two things for the jury's --

A Yeah, that's --

Q -- benefit.

A That's good.

Q All right. So is it your opinion that Sprint in the negotiation with Nokia would have preferred to have paid a lump sum paid up amount for the life of the patent?

A I think Sprint would have preferred it and I think Nokia would have preferred it also.

Q You're saying Sprint and Nokia would have preferred a lump sum that didn't go up and down based on the amount of use of the invention, rather than a royalty that fluctuated based on what might happen in the future?

A That's correct. I think that based on the relative value of the patent compared to the value of

the operation of the entire cellular network, both sides would have thought that, you know, the transaction's cost would have been -- just be easier just to write a single check and be done with it.

Q And if that single check turned out to be a fair valuation of the actual use of the invention, everybody would have been happy, right?

A Well, the rate that they would have agreed to at the time would have been one that both sides felt was fair for the use of the technology as they saw it at the time of the hypothetical negotiation.

Q So in other words, you're saying at the hypothetical negotiation, the parties would have looked out into the future and made their best estimate about what was going to happen in terms of how much this patent would be used, and they would take that usage into account in figuring out what that lump sum paid up amount should be?

A They would have taken that into account and they would have taken into account the costs of building out the system to accommodate those grow -- that growth, if they was -- if they were forecasting growth, the cost of the customer services and the other engineering costs that might be necessary to do that, and they would also take into account the risk

that -- the risk that messaging was going to fail or that something else would come in and replace it.

Q But, as it turned out, it didn't fail?

A Well, that's as it turned out, but that doesn't mean that you don't have to take into account risk at the time of the hypothetical negotiation.

THE COURT: I'm looking at the clock. I think you should plan to reach a logical breaking point very soon.

MR. HEIST: Well, why not -- ths is as good -- I'm not going to finish this topic in five minutes, Your Honor. I think maybe it would make sense to break now and resume on -- next session.

THE COURT: All right.

MR. HEIST: Thank you. Thank you, Doctor.

THE WITNESS: Thank you.

THE COURT: Let's go quickly to sidebar.

THE WITNESS: Am I dismissed, Your Honor?

THE COURT: You may -- you may step down.

THE WITNESS: Thank you.

(Sidebar discussion as follows.)

THE COURT: I think what we ought to do is recess now, and with this witness pick up on Tuesday morning.

MR. GOETTLE: Your Honor, good news and bad

news. The good news is --

THE COURT: I only want to hear the good news.

MR. GOETTLE: You only want to hear the good news?

THE COURT: Yes.

MR. GOETTLE: Okay. Well, that's good.

THE COURT: It isn't snowing.

MR. GOETTLE: The good news is that in talking to Mr. Finkelson, we think there's a -- that the most likely outcome is this case is to the jury on Thursday. The bad news is that we do not want to proceed with our rebuttal case on liability on Monday. The reason for that is because there are technical aspects of the damages witnesses that they're testifying to that Dr. Akl may need to be responding to. And so we feel like it will -- it could prejudice us in putting on our rebuttal case and putting on Dr. Akl before we've heard all of the damages testimony.

THE COURT: Although you could put him back on.

MR. GOETTLE: We could do that, and I thought about that too, Your Honor, but I feel like that's prejudicial as well because then it looks --

it just looks like we're drawing this out, and the jury has been here for a long time, and I would -- I would greatly prefer to put him on one more time and address everything that he needs to address. But I do want to remind the Court of the good news that I mentioned earlier.

THE COURT: I forgot that good news.

MR. GOETTLE: Yeah.

THE COURT: Will you remind me again, please?

MR. GOETTLE: The good news, Your Honor, is that under a reasonable estimate of how things have been proceeding -- and we've been proceeding very well -- the jury will have the case on Thursday we think, and my thinking is we're going to have a verdict on Friday. But even if the deliberations get pushed to the following week, I'd be surprised if it went very far into the following week. And I did do a little kind of running calculation. We are at seven and a half days of the trial since we've gotten a jury seated. We're at seven and a half days, and that would be right on the ten, maybe a half a day more than the ten days that we had estimated. So we're doing good.

THE COURT: Except I count jury selection.

MR. GOETTLE: Okay. So we're at 12.

THE COURT: Yes.

MR. GOETTLE: But it would be our preference to not put on a rebuttal case before the damages.

THE COURT: And Finkelson agrees. I can tell you as bitterly fought as cases are, when it comes to issues like this, the --

MR. FINKELSON: Things tend to align or there tends to be (indiscernible).

THE COURT: They certainly do. It's like it's all the lawyers against the Judge.

MR. FINKELSON: Well, we'll proceed however makes the most sense.

THE COURT: No, I --

MR. FINKELSON: We have no objection to what Mr. Goettle is saying.

THE COURT: The case is a big one and I'm not going to subject you to what might conceivably be viewed as a disjointed rebuttal.

MR. GOETTLE: Thank you, Your Honor.

THE COURT: So what you're proposing is that we recess the jury until Tuesday?

MR. GOETTLE: Yes, Your Honor.

THE COURT: We'll convene again -- I think

I want to do a little more reading. We'll get started on the charging conference at 2:00.

MR. GOETTLE: 2:00? Okay, Your Honor.

THE COURT: And you may leave, again, with our condolences.

MR. RIOPELLE: Thank you, Your Honor.

THE COURT: My son was supposed to be flying in from London. I hope all of the flights weren't cancelled.

MR. RIOPELLE: I suspect what's going on is that the major flights, you know, the transatlantic ones and the ones that go from like L.A. to -- they're going. It's those little flights that are going to little places in Virginia (indiscernible) we can use that equipment somewhere else. That's what I think is happening.

THE COURT: Well, safe trip back to Virginia.

MR. RIOPELLE: Thank you.

THE COURT: And we'll see you on Tuesday. For the jury, we'll be in recess until 9:30 on Tuesday morning.

MR. GOETTLE: Thank you, Your Honor.

MR. RIOPELLE: Thank you, Your Honor.

THE COURT: All right.

(Sidebar discussion concludes.)

THE COURT: Mr. Riopelle, you can -- you can leave.

(Pause in proceedings.)

THE COURT: Ladies and gentlemen, a word on our schedule. As the lawyers explained it to me, there's good news and -- well, I think from your perspective, good news and good news. The good news is the lawyers expect to finish their testimony sometime Wednesday, maybe Thursday morning, which is pretty close to our estimate. And in a long case it's pretty hard to estimate just how long it will take to complete. Because of situations presented by the attorneys, you're going to be in recess for this afternoon. We're not sitting this afternoon. I'll be talking to the lawyers, but we won't present any testimony. And Monday, day off Monday. We can't proceed because of issues that I think are appropriate. And we'll convene again on Tuesday morning at 9:30.

The schedule right now looks like the evidence will be completed sometime Wednesday, maybe Thursday morning. We'll then hear closing arguments, followed by my instructions on the law, which means you should begin deliberations, as best we can

predict, Thursday, probably in the afternoon. More on that later. But the good news is you can go back to doing at least some of the things you ordinarily would do this afternoon and Monday.

Day-end instructions. Do not discuss the case among yourselves. It's getting more and more tempting, but don't. Don't discuss the case with others. The reason, you can't begin deliberating until you've heard all the evidence. That takes care of talking among yourselves. As far as others are concerned, the reason why not, because you've got to decide the case based on the evidence you hear and see in the courtroom, and not based on what someone else might tell you about the case. As far as radio and television, newspapers, don't read anything about the case, don't listen to anything about the case, and don't view anything on television that might be broadcast. And lastly, don't try to do any research using social media. No research. You cannot bring into the case anything that is not presented in the courtroom. With that, have a good long weekend. Be sure to leave your notebooks and your binders in the jury room. See you Tuesday morning, 9:30. Have a good weekend.

(Jury out, 12:05 p.m.)

THE COURT: Be seated, everyone. What we will cover this afternoon -- and we'll start with the evidentiary issues. The issue that was presented yesterday, does evidence used only on cross-examination go out with the jury? I'm talking about exhibits. Mr. Riopelle mentioned his tape used on -- and the transcription of the tape used in cross-examination of Mr. Marcus, and compared that to the demonstrative exhibits that were created by Mr. Goettle in his cross-examination of Dr. -- I think it was Dr. Polish, but it might have been other witnesses as well. And I think there might be a difference. I'm not ruling now. One is a demonstrative exhibit, and that's the -- those are the exhibits -- I've forgotten how they were identified. I can tell you that a more simple way of identifying exhibits is a goal to be desired, but I think there might be a difference between that type of demonstrative evidence and something used just on cross-examination of a witness to impeach. So focus on that, and if you get a chance between now and 2:00, someone might research it. We've started.

We were -- well, we decided on the Akl rebuttal. I was hopeful that we could begin that on Monday, but under the circumstances presented by Mr.

Goettle with a modest objection, I decided that that might put Comcast at a disadvantage, and I don't want to do that, with the only goal being getting the case to the jury sooner. The good news that the case will go to the jury probably on Thursday is fine, and we're not really that much off schedule. I don't think there were any other issues. Certainly, we're going to have a charging conference, but we'll talk first about that evidentiary issue that I've just mentioned and any other issues. Now, are there any other issues that need to be presented?

MR. GOETTLE: Not from Comcast. I don't think so, Your Honor.

MR. FINKELSON: Nor from Sprint, Your Honor.

THE COURT: All right. Well, we'll start with this evidentiary issue and then get into the charging conference. I must tell you I am still concerned about the running royalty and the lump sum royalty and how the jury should be instructed. And that will be the focus of the charging conference. I think everything else falls into place. I'll have a copy of the standard instructions, pattern instructions, of the D -- that's the D.C. Bar Association. And we'll go from there. I must say as

I read those instructions again last night, some of them are rather difficult to understand.

MR. FINKELSON: I will note, Your Honor, and we can talk about this at the charging conference, that we had proposed one additional -- or one addition to one of the instructions with respect to obviousness that we just sent over to Comcast this morning. I know they're reviewing. So that will be an issue that we'll raise at the charging conference as well. All right. Fine. We're in recess -- yes?

MR. HOFFMAN: I was going to say and, Your Honor, based upon Dr. Cox's testimony, we are also going to be submitted one small additional jury instruction that we'll provide to counsel over the lunch hour, and that's up for discussion with the Court.

THE COURT: Well, I think we've got to look hard at the instructions on damages and royalty. We've taken them from the pattern instructions. I'm not certain that that's clear enough. I don't want to re-invent the wheel, but this wheel seems to have been written for driving by accomplished patent lawyers. And, unfortunately, I'm going to have to explain the law to a group of jurors who are not in that category. I mean I read one phrase over and

over again and it almost defies understanding. But we'll talk about that. And because I want you to have lunch and get back and do a little work in between, we're in recess until 2:00.

(Luncheon recess taken, 12:11 p.m.)

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I N D E X

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CERTIFICATION

I, Michael Keating, do hereby certify that the foregoing is a true and correct transcript from the electronic sound recordings of the proceedings in the above-captioned matter.

2/10/17

Date

Michael Keating